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## Journal of the Society of Arts.

FRIDAY, AUGUST 26, 1859.

### PRIZE FOR AN ESSAY ON MARINE ALGÆ.

A Prize of £100 has been placed at the disposal of the Council, by Sir W. C. Trevelyan, Bart., to be awarded for "The best Essay on the Applications of the Marine Algæ and their products, as food or medicine for man and domestic animals, or for dyeing and other manufacturing purposes. Competitors must give the results of their original investigations on seaweeds ; and they must prepare a series of specimens illustrative of the best modes of collecting, preserving, and preparing the several species. Mere compilations will not be admitted to competition."

The Essays, with accompanying specimens, must be sent to the Society of Arts by the 31st day of December, 1860. Each Essay to be marked "Essay on Marine Algæ," and to have a motto or distinctive mark attached, which mark must also be written on a sealed letter, containing the name and address of the author.

The letters containing the names and addresses of the authors will remain with the Society of Arts, and none will be opened except that bearing the motto or mark attached to the Essay to which the adjudicators award the Prize.

Copies of the conditions may be obtained on application to the Secretary of the Society of Arts.

### EXAMINATION PAPERS, 1859.

(Continued from page 638.)

The following are the Examination Papers set in the various subjects at the Society's Final Examinations, held in May last :—

#### CHEMISTRY.

THREE HOURS ALLOWED.

*No candidate is to answer more than three questions in each division.*

#### FIRST DIVISION.

(1.) How are mercury thermometers made ? How graduated according to the Fahrenheit scale ? What are their chief defects ?

(2.) Describe an apparatus for estimating the quantity of heat evolved in the combustion of coal.

(3.) What weight of boiling water is needed to melt a pound of ice without raising its temperature ?

(4.) A lamp is capable of throwing as strong a shadow upon a screen at three yards distance as a taper at one yard distance. How much stronger is the light from the lamp than that from the taper ?

(5.) Describe the construction and use of the voltameter.  
(6.) Describe and explain the electrolytic process ?

#### SECOND DIVISION.

(1.) Describe the preparation and properties of the compounds of nitrogen and oxygen ?

(2.) Describe the preparation of some of the commonest salts of ammonia, and their uses ?

(3.) Describe the preparation and chief properties of lamp black, animal charcoal, wood charcoal, and coke ?  
(4.) Describe the preparation and characteristic tests of prussic acid ?  
(5.) What weight of chlorine is evolved by heating a pound of pure binoxide of manganese with an excess of hydrochloric acid ?  
(6.) Describe the compounds of sulphur and carbon, their chief compounds and decompositions.

#### THIRD DIVISION.

(1.) How is mercury detected in presence of other metals ? How separated from them ?  
(2.) Explain the preparation and purification of metallic antimony ?  
(3.) Describe and explain the process of copper-smelting ?  
(4.) Explain the preparation, properties, and composition, of the chief compounds of lead used as paint ?  
(5.) How much metallic silver is contained in an ounce of the nitrate ?  
(6.) How is phosphoric acid detected in presence of alumina ?

#### FOURTH DIVISION.

(1.) How is cane-sugar prepared from the cane ? How refined ?  
(2.) Explain the preparation of oil of bitter almonds, and describe its purification ?  
(3.) How is benzole prepared from coal tar ? And what are its chief properties and uses ?  
(4.) How is glycerine prepared from fats ? And in what proportions does it combine with acids ?  
(5.) How is acetone distinguished from alcohol ?  
(6.) Describe the preparation, composition, and chief salts of nicotine ?

### ANIMAL PHYSIOLOGY.

THREE HOURS ALLOWED.

N.B.—The Candidate may choose such questions from this paper as he judges he can satisfactorily answer *within* the time allowed ; it being understood that value will be given for the fulness as well as the number of the answers, provided they are to the point.

(1.) Describe the principal differences in the shape, structure, and arrangement of the teeth, and in the mechanism of the jaws, in mammiferous animals ; and point out the adaptation of the same to the nature of the food and mode of feeding, in different instances.

(2.) Give an outline of the structure of the heart, of the general arrangement of the blood-vessels and the mode of circulation of the blood in a warm-blooded animal, and point out the differences in the circulating organs and in the course of the blood in a fish.

(3.) State the nature of the cutaneous perspiration, the circumstances which increase or diminish its quantity, and the purposes served by its discharge.

(4.) What changes take place respectively in the air and in the blood in respiration ? Explain how that process contributes to maintain animal heat ; and mention any facts observable in the economy of different kinds of animals, or of the same animal in different circumstances, which show a connexion between respiration and animal temperature.

(5.) Describe the structure of a nerve. State what distinction there is among the nerve-fibres as to function. Where may functionally different nerve-fibres be found associated in the same cords, and where are they separate ? How may the difference in function be proved ?

(6.) Give examples of absorption in the animal body, both of extraneous matters and of its own substance. By what vessels is the absorbed matter conveyed ? What explanation can be given of the mechanism of the process, and what remedial suggestions does a knowledge of absorption afford in the case of bites or stings of venomous animals or of wounds from poisoned weapons ?

(7.) Give an outline of the structure of the eyeball and

explain the mode in which images of external objects are formed on the retina.

(8.) Give a brief history of the changes which take place in the egg of the common fowl during incubation; comprehending an outline of the development of the several parts of the embryo up to the end of the third day, and an account of the membranes enveloping or attached to the chick and of their functions, to the end of the full period.

(9.) Give examples of larval metamorphosis—one from the vertebrata and two or more from the invertebrata—and describe briefly the process in the several cases.

(10.) State the chief circumstances in respect of organization and functional economy, in which the marsupials differ from other mammalia.

### BOTANY.

THREE HOURS ALLOWED.

*The Candidate is not to answer in all more than twelve questions, which may be selected at will from the two Sections.*

#### SECTION I. (for Competency.)

(1.) Enumerate the organs found on a perfect flowering plant.

(2.) Describe the most important diversities of form of leaves.

(3.) Name the principal forms assumed by stems of plants living more than one season.

(4.) Explain the difference of structure between a garden Rose and a Dandelion flower.

(5.) Name and give examples of the different relations in which the calyx and ovary stand in flowering plants.

(6.) What difference do we find in the structure of the seeds of wheat, mustard, and onion?

(7.) By what characters can you distinguish Deadly Nightshade and Monkshood from any other native plants?

(8.) Give the character of the order Umbelliferae.

(9.) Give the character of the order Compositae.

(10.) How do you know Orchidaceæ from any other native plants?

(11.) Refer the following plants to their respective natural orders, placing them in their respective classes, Dicotyledons and Monocotyledons:—Snowdrop, Parsley, Pink, Dahlia, Honeysuckle, Potato, Mint, Columbine, Flag, Oak, Sycamore, Arbor-Vita.

(12.) State what you know of the functions of the different organs of flowering plants.

#### SECTION II. (for Proficiency or Excellence.)

(1.) Explain the morphological connection of the organs of flowering plants.

(2.) State the general rules upon which the classification of the forms of leaves is founded.

(3.) Explain the relations of the different forms of the indefinite or centripetal type of inflorescence.

(4.) Give an outline of the general principles of the morphology of flowers.

(5.) Describe the relations of the calyx and ovary in the Saxifragaceæ, Valerianaceæ and Nymphaeaceæ.

(6.) Describe minutely the ovule and ripe seed of any plant with which you are acquainted.

(7.) Mention and give the essential characters of the poisonous Umbelliferae found wild in Britain.

(8.) Name an order which has the following character:—sepals, petals, and stamens 4—5, corolla monopetalous, valvate in aestivation, ovary inferior, 2-celled, 2-seeded, stigmas capitate. Indigenous.

(9.) Name an order which is monococious or dicocious; perianth free, divided, sometimes in two rows; stamens definite, varying in number, inserted at the base of the perianth; ovary superior, styles 2 or more, or stigmas sessile; fruit dry, 1-seeded, angular; seed erect, with mealy albumen. Indigenous.

(10.) State the differences between Ranunculaceæ, Rosaceæ, Leguminosæ and Rutaceæ.

(11.) Name the principal plants cultivated for food in Britain, belonging to the orders:—Cruciferæ, Umbelliferæ, Rosaceæ, Leguminosæ, Compositæ, Liliaceæ, and Graminaceæ.

(12.) Give a brief outline of the principal chemical and physiological phenomena occurring in the growth of ordinary green-leaved plants.

### POLITICAL AND SOCIAL ECONOMY.

THREE HOURS ALLOWED.

*Each of the four following questions should be answered.*

(1.) Define money in general, and also paper-money, and what do you include in the latter term?

(2.) What means exist of estimating the amount both of metallic money and paper money in this country, and what, so far as it can be estimated or ascertained, is the amount of each?

(3.) What are the countries with which this country has the most commerce, and in what articles chiefly with each?

(4.) When and with what object were the navigation laws enacted. When were they repealed, and what are the popular objections to their repeal, and how are those objections answered?

*The four following are optional questions.*

(1.) When was the Bullion Committee appointed—who were its leading members? What were the questions submitted to it, and how were those questions answered in the report of the committee?

(2.) What addition has been made (so far as it can be estimated) to the stock of gold in the world since the discoveries of that metal in California and Australia, and how do you account for the smallness of the effect hitherto produced upon general prices by those discoveries?

(3.) What was the origin of the land tax and its proportion to the rent of land before the acts passed for its redemption? What was the effect of those acts, and what is the nature of the contract made under them with the land-owner?

(4.) What is the origin of what is called Tenant Right in Ireland, and what questions are raised in reference to that alleged right?

*(To be continued.)*

### COMMISSIONERS OF PATENTS—REPORT, 1858.

The Commissioners of Patents appointed under the Patent Law Amendment Act, 1852, (15 and 16 Vict. c. 83.,) in compliance with the terms of the third section of that Act, make the following report of their proceedings under and in pursuance of the same for the year 1858, in continuance of their report of proceedings for 1857.

The number of applications for provisional protection recorded within the year 1858 was 3,007; the number of patents passed thereon was 1,954; the number of specifications filed in pursuance thereof was 1,880; the number of applications lapsed or forfeited, the applicants having neglected to proceed for their patents within the six months of provisional protection, was 1,047.

The Act 16 Vict. c. 5., enacts that all letters patent for inventions to be granted under the provisions of the Patent Law Amendment Act, 1852, shall be made subject to the condition that the same shall be void at the expiration of three years and seven years respectively from the date thereof, unless there be paid, before the expiration of the said three years and seven years respectively, the stamp duties in the schedule thereunto annexed, viz., £50 at the expiration of the third year, and £100 at the expiration of the seventh year.

Two thousand and forty-four patents bear date between the 1st July 1856 and the 30th June 1858; the additional stamp duty of £50 has been paid on 568 of that number; and 1,476 have become void by reason of non-payment.

All the provisional, complete, and final specifications filed in the office upon the patents granted under the Act have been printed and published in continuation, with lithographic outline copies of the drawings accompanying the same, and within three weeks of the respective dates of filing, according to the provisions of the Act 16 and 17 Vict., c. 115.

The provisional specifications filed in the office and lapsed and forfeited, have also been printed and published in continuation.

Printed certified copies of the specifications filed in the office, as also certified copies of patents, and of the record book of assignments of patents and licences, with copies of such assignments and licences, have been sent, in continuation, to the Office of the Director of Chancery in Edinburgh, and the Enrolment Office of the Court of Chancery in Dublin, pursuant to the Act of 1852, and the Act of 16 and 17 Vict., c. 115.

The work of printing the specifications of patents under the old law, 12,977 in number, and dating from 1711 to 1852, having been completed, the Commissioners of Patents have directed short abstracts or abridgments of specifications, grouped under the different heads of invention, to be prepared and published; for example, abridgments of the specifications of patents relating to the propulsion of vessels, commencing in the year 1618 and ending 1857, comprising nearly 1,000 inventions, have been published in three parts, making one small volume.

Abridgments relating to the following subjects of invention have also been published:—Drain tiles and pipes, manufacture of iron and steel (3 parts), manures, sewing and embroidering, preservation of food, aids to locomotion, and steam culture.

Other series are in the press, and it is intended to publish at the rate of six or eight series in each year, completing the work in eight or ten years.

These abridgments are sold at prices a little above the cost of printing and paper.

The following report of the Commissioners of Patents on the subject of the building of a patent office and a public library has been transmitted to Her Majesty's Treasury:—

The 4th section of the said Act enacts, that "it shall be lawful for the Commissioners of Her Majesty's Treasury to provide and appoint from time to time proper places or buildings for an office or offices for the purposes of the said Act."

In pursuance of the requisition of the Lord Commissioners of Her Majesty's Treasury, dated in 1853, the Commissioners of Her Majesty's Board of Works provided certain offices for the Commissioners of Patents, being the ground-floor rooms of the Masters' Offices in Southampton-buildings, Chancery-lane, theretofore occupied by Masters in Chancery, abolished under the Act 15 and 16 Vict., c. 80; and an annual rent of £490 is now paid out of the Fee Fund of the Patent Office to the Suitors' Fund of the Court of Chancery for the hire of the same.

This arrangement was not considered to be permanent; no lease had been granted, and as these offices are now required for the occupation of the registrars and other officers of the Court of Chancery, due notice has been given to the Commissioners of Patents, requiring them to give up possession so soon as other suitable offices can be procured.

These offices were in 1853 sufficient in number and accommodation for the ordinary business of the office.

In the year 1855 the Commissioners of Patents established a free public library within their office, containing works of science in all languages, the publications of the Commissioners, and the works upon patented and other inventions published in the British colonies and in foreign countries.

This library has greatly increased and continues to increase, partly by purchases, but in a great measure by gifts and loans of valuable and useful books. It was resorted to at the first opening by inventors, engineers, and mechanics, as well as by barristers, solicitors, and agents engaged in

patent business; it has become a collection of great interest and importance, and the number of readers has gradually so much increased, that at this time convenient standing room cannot be found in the two small rooms within the office which can be appropriated to the library. It is the only library within the United Kingdom in which the public have access not only to the records of the patents and inventions of this country, but also to official and other documents relating to inventions in foreign countries, and this without payment of any fee.

A largely increased accommodation is urgently required.

No suitable building can be found in the immediate neighbourhood of Southampton Buildings, either to be rented or for purchase.

The new offices to be provided must be fire-proof, for the preservation of the original specifications and other records of the office; the offices now occupied are fire-proof throughout.

The Commissioners of Patents are in possession of a collection of very valuable and interesting models of patented machines and implements, as also of portraits of inventors, many of them gifts, and others lent by the owners for exhibition. They are now exhibited daily, and gratuitously, in a portion of the Museum at Kensington assigned to the Commissioners of Patents for that purpose by the Lords of the Committee of Privy Council for Trade.

A museum of this nature necessarily increases, and the number of models now exhibited may be considered as forming only the foundation of a great national museum.

The great work of printing the old specifications of patents, with the drawings attached thereto, enrolled in Chancery under the old law, dating from 1623 to 1852, and 12,977 in number, was commenced in September, 1858, and fully completed in July last (1858). All have been fully indexed in series and subjects, and the indexes printed and published. These prints of specifications form about 900 volumes (450 imperial octavo volumes of drawings, and the like number of imperial octavo volumes of letter press). The indexes form seven imperial octavo volumes.

The cost of these valuable works has necessarily been great, amounting to £92,000.

Notwithstanding this great outlay, the balance sheet of income and expenditure for the year 1857, prepared for the annual report of the Commissioners, and laid before Parliament, shows a surplus income from the commencement of the Act, 1st October, 1852, to the end of 1857, of £6,000.

The balance sheet of income and expenditure for the year 1858, prepared, and shortly to be laid before Parliament, shows a surplus on the year of £5,900, thereby increasing the total surplus to £11,900.

The work of printing the old specifications being completed, as above stated, the expenditure on that head ceases altogether, and consequently the surplus income of the current year (1859) is estimated at £21,600; adding this sum to the present available surplus of £11,900, and leaving a margin of £3,500, £30,000 may be safely estimated as the sum available for building purposes at the end of the current year 1859.

The balance sheet of income and expenditure for the current year 1859 is estimated at, income, £87,800; expenditure, £65,700, shewing a surplus of £21,600.\*

The Act of 1853, (16 Vict., c. 5) converted all the fees imposed by the Act of 1852 into stamp duties, thereby passing the whole income of the office to the Consolidated Fund.

The expenditure of the office is estimated and voted annually by Parliament.

There is no appearance of diminution in the number of applications for patents, and they may be safely estimated to continue for future years at 3,000 in each year.

This number will produce £86,000 in stamp duties, and

\* The details are given in the report.—ED. *Society of Arts Journal.*

adding thereto £1,300 for the average annual proceeds of sales of printed specifications, the future annual gross income may be taken at £87,300. The gross income is, however, liable to a deduction of £16,300 on account of revenue stamp duties, leaving the real available future income of the patent office at £70,000 per annum, or thereabouts.

The Patent Law Amendment Act, 1852, (15 and 16 Vict., c. 88.) imposed certain revenue stamp duties upon patents. These duties have hitherto produced £15,300 per annum, and that sum has been charged against the office in the annual balance sheet of income and expenditure.

These duties are estimated in the balance sheet above set forth for the current year 1859 to produce £16,300 or thereabouts.

The work of printing the old specifications being completed, as above stated, the yearly future cost of the current specifications, abstracts of specifications, journals, indexes, &c., in letter-press printing, lithographic printing, and paper, will not exceed £17,500 per annum, as contrasted with the average yearly expenditure on those three heads of £39,375 within the years 1856-7-8.

The Commissioners of Patents are of opinion that it is not expedient, for the present at least, to propose to Parliament a reduction of the scale of stamp duty fees imposed by the Act of 1852.

They are of opinion that the fees paid upon the passing of a patent are not too heavy; the large number of applications (3,000 in each year) accounting for the large amount of income. Any material reduction in the amount of fees would undoubtedly tend to increase the number of useless and speculative patents; in many instances taken merely for advertising purposes.

The *see* stamp duties and the revenue stamp duties are as follows:—

|  | Fee<br>Stamp<br>Duties. | Revenue<br>Stamp<br>Duties. |
|--|-------------------------|-----------------------------|
|  | £ s. d.                 | £ s. d.                     |
| Within the first six months from<br>the petition for provisional protection to the filing of the specification | 20 0 0                  | 5 0 0                       |
| On the patent at the expiration<br>of the third year   | 40 0 0                  | 10 0 0                      |
| On the patent at the expiration of<br>the seventh year   | 80 0 0                  | 20 0 0                      |
| (The patent is granted for fourteen<br>years).   |                         |                             |

There are 3,000 petitions for provisional protection presented in each year, or thereabouts. Of this number 1,950 reach the patent, and 550 patents pay the £50 additional stamp duty required at the expiration of the third year; 1,450 patents, or nearly three-fourths of the whole, thereby becoming void. Probably not more than 100 of the surviving 550 will pay the £100 additional stamp duty required at the end of the seventh year.

Considering the beneficial results of the additional payment of £50 in sifting useless patents, the Commissioners are of opinion that it is not expedient to reduce the amount, for the present at least, and so long as the surplus can be expended for the benefit of patentees and that portion of the community which is principally interested in and connected with the practical application to public purposes of discoveries and improvements in science and art.

They are of opinion that the surplus income, calculated as before stated, to amount to £30,000 at the end of the current year 1859, and to increase in each succeeding year at the rate of £20,000 per annum, may be beneficially applied in the purchase of ground in a central situation, and in the erection thereon of a sufficiently spacious fire-proof building for the patent offices and public free library

attached thereto; and that the surplus fund may also be beneficially applied in the purchase of ground and the erection thereon of a permanent and spacious building for the Patent Office Museum, sufficient ground being taken for the extension of the building, from time to time, as may be required.

This is the more necessary inasmuch as models of the most interesting and valuable description lie scattered over the kingdom, in many instances constructed at a great expense, for legal and other purposes, for which the owners have no present use, and many of which occupy a space inconvenient to them. These models, or many of them, would, as the Commissioners confidently expect and believe, be presented or intrusted to them for exhibition in such museum, provided the public are allowed free access to it at all reasonable times.

The patent office is the place of constant, daily, and hourly resort of patentees, agents, and all others concerned in obtaining patents, and in ascertaining what discoveries and improvements have already been made. It should be conveniently placed with reference to the courts of law, the Government offices, and the offices of the attorney and solicitor general.

With respect, however, to the proposed new museum, the Commissioners of Patents are of opinion that the same reasons for a central position do not exist, and that it might be placed upon any spot easily accessible to the inhabitants of the metropolis, and that the place in which the models are now exhibited would be an eligible position, sufficient ground being there purchased or assigned for the purpose. A large space will be required for the building in the first instance, and a larger extent must be provided for its future extension; and sufficient ground cannot be found in the centre of the town for a building of the extent required, unless at an enormous cost.

The Commissioners are anxious to establish a library in conjunction with the museum, showing the patents already granted by foreign governments, and those which from time to time are so granted; and from the facilities afforded by foreign governments the Commissioners have every reason to believe that this may be accomplished without difficulty.

These are the two objects which the Commissioners of Patents present to the consideration of the Lords Commissioners of Her Majesty's Treasury, and for which they are desirous to obtain their sanction:—

1st. The erection of a museum for the preservation and exhibition of the models, as above mentioned.

2nd. The erection of suitable offices.

The latter of these objects ought properly to precede the former; but if the offices they at present hold in Southampton-buildings can be retained for the present, this object may be postponed till a convenient site can be obtained.

For the accomplishment of the former object, a very favourable opportunity at present occurs, as the Lords of the Privy Council constituting the Committee of Trade are (as the Commissioners are informed) willing to allot to them a portion of the land recently purchased at South Kensington, sufficient in extent both for the purpose of the erection of the building now required, and to provide for the future extension of the museum.

The Commissioners of Patents therefore request that the Lords Commissioners of Her Majesty's Treasury will be pleased to sanction the application of a sufficient portion of the surplus now derived from the fees paid on patents for the purpose of accomplishing the objects above mentioned, and that with this view their lordships will be pleased to give the necessary directions to Her Majesty's Board of Works to obtain a proper site for the proposed new Patent Office and Library, to be selected with the approbation of the Commissioners of Patents, and with the sanction of the Lords Commissioners of Her Majesty's Treasury, and also to prepare the necessary plans, elevations, and specifications for this purpose, also to be submitted to the Commissioners of Patents for their approval,

and to make contracts for the building of the same when approved.

If their lordships consent to these proposals, the Commissioners of Patents have to request that a sufficient sum for the purpose, so far as the same may be required for the year 1858-9, may be included in the estimate to be laid before Parliament in the present session for Patent Office expenses.

BALANCE SHEET OF INCOME AND EXPENDITURE FOR THE YEAR 1858.

| RECEIPTS.   | £       | s. | d. |
|---|---------|----|----|
| In stamp duties in lieu of fees   | 83,531  | 13 | 6  |
| By sale of prints of specifications, indexes, &c.   | 1,371   | 2  | 0  |
| Surplus income on balance of accounts from the 1st of October 1852 to the end of the year 1857 (Report to Parliament for 1867)                        | 6,005   | 5  | 6  |
|   | £90,958 | 1  | 0  |
| PAYMENTS.   | £       | s. | d. |
| Fees to the law officers of England   | 8,235   | 3  | 0  |
| Their clerks  | 748     | 5  | 0  |
| Salaries of the officers and clerks in the Patent Office  | 4,668   | 15 | 0  |
| Compensations   | 4,584   | 0  | 0  |
| Current and incidental expenses in the Patent Office  | 8,742   | 6  | 8  |
| Cost of stationery supplied by Her Majesty's Stationery Office, books for the free library, and binding   | 1,670   | 0  | 3  |
| Rent of offices   | 490     | 0  | 0  |
| Messrs. Eyre and Spottiswoode for printing specifications of patents, indexes, &c., and lithographer's bills for drawings accompanying specifications | 25,011  | 8  | 1  |
| Cost of paper supplied to the printer and lithographer by Her Majesty's Stationery Office   | 5,644   | 13 | 2  |
| Cost of coals and other fuel supplied to the Patent Office by Her Majesty's Office of Works   | 56      | 7  | 0  |
| Expenses incurred in respect of the museum at South Kensington  | 1,362   | 6  | 2  |
| Salaries of clerks for ditto  | 575     | 0  | 0  |
| *Revenue stamp duty income as below   | 15,350  | 0  | 0  |
| Surplus Income  | 13,819  | 16 | 8  |
|   | £90,958 | 1  | 0  |

CAMPBELL, C.  
JOHN ROMILLY, M. R.  
RICHARD BETHELL, A. G.  
HENRY S. KEATING, S. G.

Dated the 20th July, 1859.

\* The Act of 1852 in lieu of the old duties upon patents imposed a Revenue Stamp duty of £5 upon the warrant of the law officer, £10 upon the certificate of payment of the progressive fee of £40 at the expiration of the third year, and £20 upon the certificate of payment of the fee of £80 at the expiration of the seventh year of the patent.

The Act of 1853 (16 Vict. c. 5.) converted all the fees imposed by the Act 1852 into stamp duties.

The Revenue stamp duty account for the year 1858 is as follows:—

|  | £       | s. | d. |
|--|---------|----|----|
| 1,934 Warrants of the law officers for patents, at £5 each   | 9,770   | 0  | 0  |
| 558 Patents on which the progressive duty of £50 has been paid at the end of the third year from their respective dates (£10 being Revenue stamp duty and £40 fee stamp duty), 558 at £10 each | 5,580   | 0  | 0  |
|  | £15,350 | 0  | 0  |

THE NEW HORTICULTURAL GARDENS AT KENSINGTON-GORE.

Her Majesty's Commissioners for the Exhibition of 1851 having conceded a satisfactory alteration in the claims objected to by the Horticultural Society, the council have passed the following resolution:—"That the terms of her Majesty's Commissioners be accepted as the basis of a lease—and that the society's solicitors be instructed to act for the society in its preparation." It may therefore now be considered certain that the West-end is to have the beautiful garden contemplated. The subscription is reported as going on most satisfactorily, about £28,000 having been already tendered to the council.

ALUMINIUM.\*

As respects the soldering of this metal, until very lately quite imperfect results have been attained. In the Universal Exhibition of 1855, there were pieces of aluminium soldered with zinc or with tin, but this weak solder did not give any solidity. Others have tried to solder with alloys of zinc, silver and aluminium. Mr. Denis, of Nancy, has noticed that whenever aluminium and the solder melted over its surface was touched with a slip of zinc, the adhesion took place with great rapidity, as if a peculiar electric action gave it an impulse at the moment of contact; but this solder also has failed to afford much strength.

At last it has been suggested that the difficulty might be surmounted by previously coating the piece with copper, and then soldering together the coppered surfaces. In order to effect this, the aluminium, or at least the parts to be soldered, are plunged into a bath of acid sulphate of copper. The positive pole of the battery is put in direct communication with the bath, and the pieces to be coppered are touched with the negative pole; the deposit of copper takes place very regularly over the surface of the aluminium. These surfaces thus prepared are soldered in the ordinary way.

All these processes are, as is seen, very imperfect, and they now have only a historical interest, on account of a new and perfect method of soldering just discovered. The inventor is a gilder and silverer of metals, belonging to Paris, named Mourey; he has recently announced his process in a public meeting of the Société d'Encouragement. The alloy employed is composed of zinc and aluminium; Mr. Mourey employs five different varieties of it according to the article to be soldered; the composition is as follows:—

|            | I. | II. | III. | IV. | V. |
|------------|----|-----|------|-----|----|
| Zinc,      | 80 | 85  | 88   | 95  | 94 |
| Aluminium, | 20 | 15  | 12   | 8   | 6  |

To prepare it, he melts the aluminium in a crucible of graphite, the metal having been reduced to fragments and added little by little; when the mass is in fusion it is stirred with an iron rod while the zinc is added in small quantities at a time; the alloy is still stirred while a little tallow is added to prevent the oxydation of the zinc, and then it is cast in small ingots. It is important to avoid too high a temperature, lest the zinc should be volatilized. It is also important that the zinc should be free from iron.

These five alloys have different points of fusion. Alloy No. I. is the hardest; the others are softer in regular succession.

As for the manipulation of the solder, this comes under technology. Mr. Mourey has described it in detail; but it would be going too much into specialities for us to cite his account of it, and we subjoin only a few facts interesting in a scientific point of view.

The instrument which is used in the soldering, and which is called in French "fer-à-soudre," ought not in soldering aluminium to be either of iron or copper, but

\* *Silliman's Journal.* Correspondence of Professor J. Nickles.

of aluminium itself; for the soldering alloy adheres to iron or copper in preference to aluminium. The flux used to facilitate the adhesion is made of three parts balsam of copaiba mixed with one part of pure turpentine; the materials are mixed in a porcelain capsule, and a few drops of lemon-juice are added to favour the mixture of the two resins.

This flux is used for thoroughly impregnating the fragments of solder which are to be employed. It is important to use the blow-pipe no longer than is necessary, to prevent loss of zinc from volatilization.

Mr. Gerhard, of Battersea, has also invented a solder for aluminium, which is stated to effect the purpose.

Mr. Gerhard has also found out a means of giving a peculiarly white frosted appearance to this metal, producing a surface superior to anything formerly exhibited. He thus gets rid entirely of that cold blue zinc-like appearance which has hitherto been a drawback to the use of aluminium for ornamental purposes.

As neither of these processes is patented, their manipulation cannot be made public at present.

#### LONDON DISTRICT TELEGRAPHS.

The report of the London District Telegraph Company, states that of their 12,000 £5 shares 10,740 have been issued, on which a deposit has been received of £1. The formation of the 11 district stations is in progress, and the 89 sub-district stations are expected to be opened by the 1st of January. The lines completed consist of six miles underground and three and a-half miles over-house, and the lines in progress consist of five miles underground and eight miles over-house.

#### NATIONAL ASSOCIATION FOR THE PROMOTION OF SOCIAL SCIENCE.

President of the Council, the Right Hon. Lord Brougham.

The third annual meeting will take place at Bradford, on Monday, the 10th of October next, and five following days.

President, the Right Hon. the Earl of Shaftesbury; Vice-Presidents, the Mayor of Bradford, Sir John Ramsden, Bart., M.P., the Right Rev. the Bishop of Ripon, Frank Crossley, Esq., M.P.; Presidents of Departments, 1.—Vice-Chancellor Sir W. Page Wood, 2.—Right Hon. C. B. Adderley, M.P., 3.—R. Monckton Milnes, Esq., M.P., 4.—Right Hon. W. Cowper, M.P., 5.—Sir James Kay Shuttleworth, Bart.; General Secretary, G. W. Hastings, Esq.; Treasurer, W. S. Cookson, Esq.; Foreign Secretary, H. G. Bohn, Esq.; Local Secretaries, Rev. J. H. Ryland and R. W. Marsland, Esq.; Local Treasurer, J. V. Godwin, Esq.

All communications concerning papers or other business of the meeting, must be addressed to the General Office, 3, Waterloo-place, Pall-mall, London, S.W. Every paper must be sent to the General Secretary, on or before the 20th of September next. On the first page of every paper must be written the subject, the name of the author, and his address. The Council reserve the right of rejecting any paper which they consider inappropriate. No paper must occupy in reading more than twenty minutes. No paper already published can be read. No paper, when read, can be published by the author (unless by permission of the Council) previous to the publication of the Transactions of the Association for 1859. The Council may print any paper, either in whole or in part, or may exclude it from the Transactions, as they see fit.

FIRST DEPARTMENT.—JURISPRUDENCE AND AMENDMENT OF THE LAW.—President, Vice-Chancellor Sir W. Page Wood; Vice-Presidents, H. W. Ripley, Esq., President of the Bradford Chamber of Commerce, and Robert Collier, Esq., Q.C., M.P.; Secretaries, J. Napier

Higgins, Esq., and A. Ryland, Esq.; Local Secretary, John Darlington, Esq. In this department is discussed the science of Civil Jurisprudence; its bearing on the social condition of the people; the advantages derivable from a wide diffusion of its principles; the practical defects in our laws; the evils arising from such defects; and the fitting remedies. Papers may be classed under the following heads:—1.—The principles of Jurisprudence and Legislation. Province of Legislation—Adaptation of Law to Social Changes—etc. 2.—The Method of Legislation. The Preparation and Passing of Bills—Minister of Justice—Judicial and Legislative Statistics—etc. 3.—Administration of Justice. Superior and Local Courts—Procedure and Evidence—Professional Regulations—etc. 4.—Laws relating to Property. Mercantile Law—Real Property Law—etc. 5.—Laws relating to Persons.

SECOND DEPARTMENT.—EDUCATION.—President, the Right Hon. C. B. Adderley, M.P.; Vice-Presidents, Rev. J. Burnet, LL.D., Vicar of Bradford, Edwin Chadwick, Esq., C.B., and W. E. Forster, Esq.; Secretaries, Rev. G. D. Boyle and Rev. Nash Stephenson; Local Secretaries, Rev. H. J. Burfield, M.A. and Rev. H. B. Creak, M.A. This department deals with the various questions relating to Education, both industrial and intellectual, whether of the upper, middle, or lower classes of society. Papers may be classed under the following heads:—1.—The Objects of Education. 2.—The Means and Methods of Education. University Education—Grammar and Foundation Schools—Competitions for the Civil Service—Middle Class Examinations—Privy Council System—Voluntary System—The Principle of Supporting Schools by Local Rates—Factory Schools—Union Schools—Ragged and Feeding Schools—Agricultural and Industrial Training as an element in School Instruction—Schools of Art—Mechanics' Institutions—etc. [It is proposed, in accordance with a Resolution passed by this Department at Liverpool in October last, to make method in teaching a subject of special treatment.] 3.—The Effects of Education. Better Training of all Classes for their Mutual Duties—Increased Efficiency of Public Services, Professions, etc.—Increased Productive Powers—Saving in Criminal Expenditure, Poor Rates, etc.

THIRD DEPARTMENT.—PUNISHMENT AND REFORMATION.—President, R. Monckton Milnes, Esq., M.P.; Vice-Presidents, E. B. W. Balme, Esq., and Rev. Sydney Turner; Secretary, Martin Ware, Jun., Esq.; Local Secretaries, Rev. J. R. Campbell, M.A., and M. W. Thompson, Esq., M.A. In this department are discussed the various questions relating to the prevention and repression of crime; the reformation of the criminal; the best mode of secondary punishment; prison discipline; the management of reformatory schools and institutions, &c. Papers may be classed under the following heads:—1.—Incentives to and Prevention of Crime. Receivers of Stolen Goods—Marine Store Dealers—Beer Houses, and Disorderly Houses. 2.—Criminal Law and Procedure. 3.—Treatment of Adult Offenders. The Convict System—The Prison System—Remunerative Work in Prisons—Public Supervision of Discharged Prisoners—Prisoners' Aid Society—Adult Reformatory Schools—Ship Reformatory—Reformatory for Incorrigibles—Certified Industrial Schools—Methods of enforcing payment from Parents—Mixing of Criminal and Destitute cases in Refugees—Teaching of Trades in Reformatory and Refugees—Disposal of Boys and Girls on leaving Reformatory.

FOURTH DEPARTMENT.—PUBLIC HEALTH.—President, The Right Hon. W. Cowper, M.P.; Vice-Presidents, H. W. Wickham, Esq., M.P., J. Simon, Esq., F.R.S., and T. Southwood Smith, M.D.; Secretaries, W. Farr, M.D., F.R.S., and Philip H. Holland, Esq.; Local Secretaries, Dr. Macturk and H. F. Lockwood, Esq. This department considers the various questions relating

to the public health; it will collect statistical evidence of the relative healthiness of different localities, of different industrial occupations, and generally of the influence of external circumstances in the production of health or disease: it will discuss improvements in house-construction (more especially as to the dwellings of the labouring classes), in drainage, warming, ventilation; public baths and wash-houses; adulteration of food and its effects; the functions of government in relation to public health, the legislative and administrative machinery expedient for its preservation; sanitary police, quarantine, &c.; poverty in relation to disease, and the effect of unhealthiness on the prosperity of places and nations. Papers may be classed under the following heads:—1.—The Condition of the Public Health. The subjects, chiefly statistical, referred to this head, will comprise everything that relates to the past or present state of the Public Health. Papers descriptive of the general state of health of particular districts, or of the same districts at different periods, or under different circumstances, and of persons engaged in the several industrial occupations, as well as of the special diseases to which particular localities, and modes of life or of occupation, are most liable; will be classed under this division. 2.—The Causes which modify the Public Health. To this head will be referred papers that treat of the causes which, whether favourably or injuriously, affect the Public Health, and the mode in which these causes act. This division will thus include the consideration of the production of disease by external causes to which persons, either individually or collectively, are liable to be exposed; such as climate, soil, locality, habitation, diet, occupation, station, or habit. 3.—The Improvement of the Public Health. Communications that suggest plans for the amendment of the Public Health, whether these have reference to legislative enactments, and the machinery requisite for the administration of sanitary law; to the removal of causes of disease by engineering or other mechanical appliances; or to the prevention of disease by hygienic precautions, will be classed under this head. 4.—Social and Economical Aspects of Public Health. This division will include inquiry into the effect of diminished death-rates upon the Population—the effect of Sanitary Improvement on the National Wealth, the Diminution of Pauperism, and the general Moral and Physical Elevation of the Community.

**FIFTH DEPARTMENT.—SOCIAL ECONOMY.**—President, Sir James Kay Shuttleworth, Bart.; Vice-Presidents, E. Akroyd, Esq. and Titus Salt, Esq., M.P.; Secretary, Professor John Wilson; Local Secretaries, Rev. J. P. Chown, and George Wood, Esq., M.P. In this department are considered the various questions relating to Social Economics; the conditions of Industrial Success, whether of nations or individuals; the relation between employers and employed; strikes and combinations; legislative interference with the hours and wages of labour; legislative regulation of professions, trades, and employment generally, and of price and means of supply; emigration, its effect, and true conditions; industrial employment of women; industrial and economical instruction of the labouring classes; public amusements; social economics in relation to education; exercises of public and private charity; relief of the poor. Papers may be classed under the following heads:—1.—Conditions of Industrial Success. Accumulation and Employment of Capital—Freedom of Trade—Apprenticeship System—Trades' Unions—The effects of Science and Machinery on Industrial Success—The Factory System—etc. 2.—Condition of the Working Classes. Habitation—Domestic Economy—Provident Habits—Recreation—etc. 3.—Charity and Relief. The effects of Charitable Endowments—Workhouse Relief and Management—etc. It is considered desirable that one or two papers in this department should be devoted to the more abstract questions of Economic Science; to generalizations of ascertained facts, and enunciation of the

laws to be deduced from them. [The following special question has been proposed for the consideration of this department at the Bradford meeting:—How far, and in what way, can the National Census of 1861 be made available for procuring information on the moral, material, and social condition of the country?]

### DISINFECTION OF SEWAGE.

The following letter, addressed to the Editor of the *Daily News*, gives the result of some experiments on M'Dougall's disinfecting powder, an account of which appeared in the Paper read before the Society by Dr. R. Angus Smith, F.R.S. (See *Journal*, Vol. V., p. 333):—

SIR.—The present state of the Thames has become so dangerous to the whole community, that it has for some time drawn the attention of the authorities to the consideration of some plan by which its action may be prevented. Hence experiments have been made with various disinfectants, at the request of the Metropolitan Board of Works, by Professor Miller, of King's College. What the results are at which he has arrived I have no exact means of knowing, but having for years experimented with various disinfectants, and having drawn the attention of the public to the effects produced—(you yourself having once granted me the use of your valuable space for the purpose)—I would ask your consent to publish my experience upon the sewage in the present year.

It may be as well to state that my results last year were so entirely in favour of the disinfectant of Messrs. Smith and M'Dougall, of Manchester, that I was induced, early in the present year, to repeat them. I again found that sewage of the worst description, emitting the most deleterious gases, could be rendered perfectly sweet and harmless, emitting only the odour of the impure coal-kreosote (carbolic acid) which forms the important feature of Dr. Smith's invention. Whenever a sufficient quantity of the disinfecting powder was employed, I found that sewage precipitated in May was perfectly free from sewage odours in July; and sewage deposit, which is the worst part of sewage, when similarly dealt with, remains to this day equally beneficially effected. Comparing these results with those I published last year; and especially comparing the disinfected specimens with one which I have had these three years (last June) in my possession, and finding the results perfectly in concordance, it cannot be wondered that the patentees, with a knowledge of these facts, should have desired me to make notes of any experiments which might be made under the direction of the Board of Works. Accordingly, I have done so, and subjoin such results as I have arrived at. According to Dr. Miller's suggestion, Mr. M'Dougall employed a portion only of his patent, viz., that which embraces the use of carbolic acid and lime. Although I am of opinion that these include the most valuable part of Dr. Smith's discovery, yet I cannot but think that the whole patent, which involves the additional employment of sulphate of lime and magnesia, is better suited to effect the object, viz., prevention of the decomposition of both animal and vegetable matter. However this may be, the results of the large experiment on the Tottenham-court-road sewer are sufficiently satisfactory to warrant a similar application to the Thames.

The quantity of carbolic acid employed in the above sewer averaged 685 lbs. (at 6s. 6d. per cwt.) per day, together with 70 lbs. of lime and 12,000 gallons of water. On the hottest days, a larger amount appeared necessary, as I judge from the results; at least this is certain, that when another cwt. or so was employed in excess of the above 685 lbs., the sewage bore the highest temperature to which it could ever be exposed under the

highest conceivable solar influences, continued for six days, without evolution either of sulphuretted hydrogen or any other foul emanation.

I will not ask you to publish each experiment, but will merely record that the clear amber-coloured solution of carbolite of lime was churned by paddles into an opening in the sewer in Tottenham-court-road, and that the specimens examined by me were the precise counterparts of those which Dr. Miller received.

The conclusions I arrived at were, that it was quite within the reach of possibility to prevent altogether the evolution of nauseous gases from London sewage, and not difficult to disinfect the Thames. But if price is a consideration, I cannot understand how any other disinfectant can be employed. The experiments made with chloride of lime distinctly indicate that, unless in actual excess, which would involve six times the outlay, the sewage becomes almost as bad as before its addition. Effective, too, as is Cundy's, a similar objection applies both as to price and continuous results. If, then, as I am entitled to conclude from very many experiments, it is possible to prevent the Thames from continuing, year after year, the most dangerous nuisance, by the judicious application of Messrs. McDougall's disinfectant, it becomes simply a question of proportions and price. The latter I would not attempt to fix, as my data are at present insufficient; but the proportions admit of scientific calculation. The mode of appliance is fortunately at hand. Not contented with disinfecting the sewage, we must at once direct attention to the Thames. By diffusing the disinfectant with the aid of the paddles of the numerous steamers which are constantly stirring up the mud of the river, we have a method which would ensure complete success in purification in the course of a week.

But whether or not such a plan be adopted, no effectual good can be done by dribs and drabs. The expenditure of £1,500 per week in lime and chloride of lime at the mouths of the sewers is perfectly useless, and will accomplish nothing towards preventing the rise of deadly miasma from the body of the river.

I am, &c.,  
ALBERT J. BERNAYS,  
Lecturer on Chemistry at St. Mary's  
Hospital, Paddington.

#### SALE OF GAS.

Below is given a short abstract of a bill for regulating the sale of gas, which received the royal assent on the last day of the session of Parliament.

It is a matter of notoriety that, owing to the absence of any legal control, or supervision in the matter, there have been constant wranglings between the gas consumers and the gas companies throughout the kingdom on the subject of measurement, many of the former complaining that they have been charged largely in excess of the quantity actually used, while not a few of the companies on their part have not unfrequently charged their customers with tampering with their respective meters. Seeing, therefore, that the design of this Act is to prevent, so far as such matters are preventible, the recurrence of these inaccuracies and disputes, and seeing also that the sum paid for gas in this country is said to amount to £5,000,000 sterling annually, it is evident that this Act is one of vast practical importance to all who have to do with this commodity, whether as buyers or sellers.

After the passing of this Act the only legal standard or unit of measure for the sale of gas by meter shall be the cube foot, containing 62.321 lb. avoirdupois weight of distilled or rain water, weighed in air at the temperature of 62 degrees of Fahrenheit's thermometer, the barometer being at 30 inches; except as relates to contracts made before the passing of this Act, by which a difference of unit of measure is adopted, which contracts may not be

renewed. The models of measures are to be made and verified under the direction of the Treasury, and afterwards to be deposited in the office of the Controller-General of the Exchequer at Westminster, and copies of the same are to be sent to the Lord Mayor of London, the chief magistrates of Edinburgh and Dublin, and to the chief magistrates of such other cities and boroughs, and to such other places and persons in Her Majesty's dominions, as the Lord High Treasurer of Her Majesty's Treasury may from time to time direct. The number and sizes of the said models to be decided within nine months from the passing of this Act in England by order of general or quarter sessions, excepting in the case of boroughs where the order shall be made by the town council, and in Ireland by the town council or town commissioners of every borough or town (such town council or commissioners not being manufacturers or sellers of gas), and in Scotland by meetings of justices. The same authorities are to have the appointment of inspectors of meters, who are to be paid out of the county rate, and in boroughs out of any funds applicable for lighting purposes; and if no such fund, then out of the borough fund (in the city of London out of the consolidated rate). Similar arrangements are made in the case of Ireland and Scotland. Inspectors are required to furnish security, are subject to a fine not exceeding £5 for each breach of duty, and are prohibited from repairing, making, and selling meters of gas, and must hold no appointment of any kind in any gas company. Justices of the peace and the town council in boroughs to determine and appoint on what days, at what hours, and at what places the inspectors shall attend with their measuring apparatus within their respective jurisdictions. A trifling fee to be charged for testing, &c., each meter—for meters of a small size it will be 6d.—such fee to be paid over to the treasurer of the county, or to such other person as shall be duly authorised by those by whom he may have been appointed; no meter shall be stamped which shall be found to register, or be capable, by the increase or decrease of water, or by any other contrivance practically prevented in good meters, of registering quantities varying from the true standard measure of gas more than 2 per cent. in favour of the seller, or 3 per cent. in favour of the consumer. The only exception to this which is permitted is where two contracting parties enter into a written agreement to adopt a different kind of meter. At the request and expense of any buyer or seller of gas it shall be lawful for any inspector, authorized in writing under the hand of any justice of the peace in England or Ireland, or of any sheriff, justice, or magistrate in Scotland, at all seasonable times to enter any building, yard, or other place where any meter, whether stamped or unstamped, is fixed, and to examine and test, and if necessary to remove the same. Before this can be done, however, it is necessary that the other party to the contract should have previously received 24 hours' notice in writing of such intention. In case of a disputed decision of inspectors, the point to be referred to two inspectors of adjoining districts. Persons aggrieved may appeal to quarter sessions. After the expiration of 12 months from the passing of this Act no gas meter shall be fixed for use but what has been duly tested and stamped outside in legible letters or figures by an inspector of meters under the provisions of this Act, and every purchaser and seller of gas may at any time after the expiration of the said 12 months require any unstamped meter by which his gas is measured to be examined, tested, and, if found correct, stamped, or he may at his own expense substitute a stamped meter in place of any such unstamped meter.

#### WESTMINSTER CLOCK.

The following letter has been addressed to the Editor of the *Times*, by Sir Chas. Barry:—

SIR.—My attention has been called to a letter in the last number of the *Journal of the Society of Arts*, from

Mr. Loseby, respecting the Westminster clock, in which he alludes to a statement recently made in the House of Commons by Mr. Fitzroy respecting the minute hands made by my authority, the weight of each of which he reported to be above 3 cwt.

That statement was made, I find, upon the authority of Mr. Denison alone, and, as it has already misled Mr. Loseby, and possibly the public also, I think it right to put you in possession of the facts of the case.

These hands, which are now condemned by Mr. Denison, were prepared under his own control; one of them was submitted to him as a specimen before the remaining three were made, and met with his cordial approval; the others were made by his orders, in strict accordance with the specimen which he had approved; and he fixed the whole of them when finished, and made himself responsible for the cost in so doing. The weight of each hand, exclusive of the external counterpoise, is 1 cwt. and 25 lb.

It is obvious, therefore, that Mr. Denison, and he alone, is as fully responsible for those hands as he is for all the other going parts of the clock.

I am, &c.,  
CHARLES BARRY.

Old Palace-yard, Aug. 23.

To this letter Mr. Denison makes the following reply:—

SIR,—Our great architect's head has evidently been turned by his unusual run of luck. Hitherto he has been getting that pleasant little *solatium* which architects do, on all his extravagances and miscarriages at Westminster, while other people have got the blame.

Architecture, ventilation, clock-making, dial-making, bell-hanging, it is all the same. The building has cost three times the estimate, and is full of blunders and inconveniences, and for that Gothic architecture and Mr. Scott are to bear the blame and to suffer, and Sir Charles Barry's son, in the Italian line, is to get the benefit, if it can be managed, besides the building of the new Burlington-house without any competition.

The ventilation cost about a quarter of a million, and has to be finished by opening the windows in the vulgar way; and Dr. Reid, whose ventilation of the old House, everybody says was perfect, is sent adrift and pronounced the impostor.

The clock is kept waiting for the tower for five years, and until Sir Charles and his friends were unwise enough to try to throw the blame publicly on me, everybody supposed it was all my fault.

The bell-frame would not stand the striking of the bell, as I had warned his clerk of the works that it would not; but the sagacious Quartermaster takes care to tell his visitors how tight the bell was screwed up, and to suggest that as the reason why the frame shook; whereas, it was screwed up tight by an architect's engineer, contrary to my intentions, and the frame was no better when it was made loose.

The dials and hands made by him cost £5,900, and the clock only £2,376 up to last April, and somehow or other it is managed to lump them together in a Parliamentary return, with £6,061 more of incidental expenses, neither of the clockmaker or the bellfounders, and people exclaim, "What a heap of money that clock has cost!"

So now, I suppose, he thinks he can persuade the public that Mr. Fitzroy, who had all the facts before him from both sides, misled the House of Commons the other day, and that I am responsible for the hands made by Sir C. Barry being too heavy to go, and too weak to resist the wind.

I wish Mr. Fitzroy had not contented himself with stating the facts, though he did so quite correctly, and had consented to the papers being printed. The shortest account I can give of the matter is, that Mr. Dent

gives credit to the Government for no less than 26 cwt. of old gunmetal, copper, lead, and cast iron, of which Sir C. Barry's minute-hands and their counterpoises were compounded; and that the four new ones, which are a great deal stronger, weigh exactly 8 cwt., the very weight which I myself prescribed to him as the proper one, when I consented to his making them instead of Mr. Dent, in 1856.

To his statements that I approved those hands as ultimately made by him, and that I fixed them, or saw them before they were fixed, or had anything whatever to do with the fixing, I give the flattest contradiction within the compass of the English language. The fixing was as bad as the hands, and such as no clockmaker ever adopts, and such as rendered it impossible to make them balance in all positions.

As he has chosen to stir this question, I will now say that from the time when I was first asked to take this business in hand until now, there has not been a single stage in it in which we have not been put to needless trouble, and the nation to needless expense by Sir Charles Barry's carelessness and blundering. The design of the clock had to be altered to suit his walls, the clock shaft was too wide one way and too narrow the other; the great bell could never have been got up at all if it had been made of the usual shape, though he himself fixed the weight, and therefore the size of it, in 1846; the clock was kept back for years because it had to stand over the only place where the bell could be got up by any contrivance; the clock-room was too dark to work in; the staircase is now in the only dark corner of the tower, and has to be kept lighted with gas, and has windows opening into the ventilating chimney, where charcoal is burnt while Parliament is sitting; and so I might go on with a number more of obstructions, moral and physical, which I have had the trouble of encountering and the satisfaction of defeating.

I am content with the success if Sir Charles Barry is with his percentage; at any rate, he shall have nothing else, he may depend upon it.

Yours obediently,  
E. B. DENISON.

August 24.

#### PARLIAMENTARY REPORTS.

##### SESSIONAL PRINTED PAPERS.

PAR. NO.

*Delivered on 4th August, 1859.*  
FIRST SESSION 1859.

222. Benefit Building Societies—Return.  
*Delivered on 5th August, 1859.*  
111. Yacht Clubs—Return.  
126. Wakefield Election—Minutes of Evidence.  
109. Bills—East India Loan.  
110. Reserve Force.  
208 (A' 2). Poor Rates and Pauperism—Return (A).

#### PATENT LAW AMENDMENT ACT.

##### APPLICATION FOR PATENTS AND PROTECTION ALLOWED.

[From Gazette, August 19th, 1859.]

Dated 29th June, 1859.

1545. W. Wray and J. Wray, Leeming, near Bedale, Yorkshire—Certain imp. in reaping machines.  
*Dated 19th July, 1859.*  
1656. W. A. Munn, Throwley House, near Faversham, Kent—Imp. in reaping machines.  
*Dated 20th July, 1859.*

1708. Z. G. A. N. P. Orioli, 29, Boulevard St. Martin, Paris—New applications of hypochloride of alumina to bleaching and dyeing, and to the disinfection and preservation of organic matters.  
*Dated 21st July, 1859.*

1710. H. B. Preston, Liverpool—Imp. in apparatus for superheating steam.  
*Dated 28th July, 1859.*

1752. J. Aspinall, Charing cross, Middlesex—Imp. in evaporating and in apparatus for the same, especially applicable to the evaporation of sugar.

Dated 29th July, 1859.

1760. S. Wilson, Manchester—Certain imp. in the construction of presses for compressing cotton and other articles.

Dated 30th July, 1859.

1766. F. Haeck, Schaerbeek, near Brussels—Imp. in refrigerating apparatus, especially adapted to pumps and other apparatus for the supply of beer and other liquids.

1772. W. Jamieson, Stoney Middleton, Derbyshire—Improved churn. A com.

Dated 1st August, 1859.

1774. W. Campbell and G. Worstenholm, Birmingham—Certain imp. in machinery for the manufacturing of wrought nails, as also in the treatment of the iron from which such or other kinds of nails may be made. A com.

1776. T. W. G. Treeby, 1, Westbourne-terrace Villas, Upper-Westbourne-terrace, Paddington—Imps. in targets.

1780. W. E. Newton, 66, Chancery-lane—An improved mode of apparatus for making metal cylinders suitable for steam boilers and other purposes. A com.

Dated 2nd August, 1859.

1786. B. Donkin, Bermondsey, Surrey—Imp. in and in connection with slide and other valves. A com.

Dated 3rd August, 1859.

1787. A. Pin, Castelnau-les-Forges, France—The compounding, preparing, and application of a new sort of paint.

1788. J. Hewett, Sheffield—Imp. in self-acting water-closets.

1789. W. K. Peace, Sheffield—An imp. in canisters for hermetically sealing paints and other substances. A com.

1790. M. Mason, Manchester—Imp. in machinery for printing, and in apparatus connected therewith.

1791. W. H. Tooth, 3, Spring-terrace, Wandsworth-road—Imp. in machinery or apparatus for the manufacture of iron or steel.

1793. J. Petrie, jun., Rochdale—Imp. in machinery or apparatus for washing wool.

1794. J. H. Phipson and W. A. Watson, Birmingham—A new or improved lubricator for lubricating shafts and other articles requiring lubrication.

1795. W. H. Blews, Birmingham—A new or improved regulator for gas burners.

1796. E. Dowling, Little Queen-street, Holborn—Imp. in rosettes or ornaments applicable to harness, and for other purposes.

Dated 4th August, 1859.

1797. T. Lister, Sheepbridge, Derbyshire—An improved sanatory watercloset.

1798. J. Horton, Handsworth, Staffordshire—A new or improved water gauge for steam boilers.

1799. R. A. Broome, 166, Fleet-street—Imps. in mills for grinding coffee, corn, and other substances. A com.

1801. F. Walton, Haughton Dale, Denton, near Manchester—Imp. in the manufacture of ornamental fabrics, suitable for book-binding and other uses, and in machines employed in such manufacture.

Dated 5th August, 1859.

1803. E. B. Gowland, Brecknock-street, Camden Town—Imp. in pianofortes.

1804. E. Swainson, Preston—Certain imp. in looms for weaving.

1804. N. D. Maillard, 18, York-street, Dublin—Imp. in compasses for indicating the course and time of ships at sea, without the use of needles or magnets.

1907. N. Berry, Paris—An imp. in the manufacture of knitted fabrics. A com.

1909. W. E. Newton, 66, Chancery-lane—An imp. in billiard and bagatelle cues. A com.

1810. F. W. Beaumont, Clapham, Surrey—A hydraulic apparatus applicable to transmitting, regulating, and measuring the supply or flow of liquids.

1811. W. Thompson, 45, Essex-street, Strand—An improved printing telegraph.

Dated 6th August, 1859.

1815. A. B. Childs and L. D. Owen, 192, Tottenham-court-road—Imp. in machinery for cleaning grain and seeds from smut and other extraneous matter.

1816. A. T. De Lisle, 14, Addison-road, Kensington—Imp. in clarifying and decolorising solutions of sugar and other liquids.

1817. E. A. Suwerkrop, Leith—Imps. in reaping and mowing machines. Partly a com.

1818. A. F. Delanney, Paris—Imp. in lubricating the axles or journals of wheels, also applicable to lubricating apparatus for the transmission of motion in general.

1819. J. W. Welch, Manchester—Imp. in machinery or apparatus for sizing or dressing yarns or threads for weaving.

1820. E. T. Hughes, 123, Chancery-lane—Imp. in machinery or apparatus for manufacturing ch-nille. A com.

Dated 8th August, 1859.

1821. J. Weston, Fenton, Staffordshire—Imp. in breaks for railway carriages, and in the method of applying the same, and in conveying signals from one part to another of the same train, parts of which are applicable to breaks for other purposes.

1823. H. Liddle, Middleton, Lancashire—Imp. in machinery or apparatus for polishing yarns or threads.

1829. J. H. Johnson, 47, Lincoln's-Inn-fields—Imp. in apparatus for steering ships, applicable also in all cases where a rotatory or partial rotatory motion is required. A com.

1831. B. S. Cohen, Magdalene-row, Great Prescot-street, Middlesex—Imp. in ever-pointed pencils.

1833. T. Blinkhorn and R. Blinkhorn, New-road, Spalding—An improved composition for removing scale or fur from the interior of boiler, and also for preventing the formation of scale or fur therein.

Dated 9th August, 1859.

1835. T. Dunn, Manchester—Imp. in machinery and apparatus for elevating and regulating the level and flow of liquids, part of which is applicable for propelling vessels.

1837. P. F. Rolland, Ixelles, Belgium—A new electric telegraph.

1839. I. Mitchell and S. Lister, Bradford—An improvement in apparatus applicable to machinery for spinning fibrous materials.

1841. J. B. Babcock, Milk-street, Boston, U.S.—Imp. in bustles and skirts. A com.

1843. J. D. Bryant, Rock, Cornwall—Improved superphosphate of lime.

1845. B. Browne, 52, King William-street—Imp. in the manufacture of paints and pigments. A com.

1847. W. Mac Lellan, Glasgow—Imp. in parts of the permanent way of railways. A com.

Dated 10th August, 1859.

1849. W. Muir, Manchester—Imp. in machinery for communicating motion to foot lathes and other machines to be worked by treadles.

1851. W. K. Westly, Leeds—Improved machinery for combing, heckling, and preparing to be spun flax and other fibrous substances.

1853. A. Shaw—Certain modes or methods of preparing sheep or other skins or pelts, or the linings thereof, and for raising nap on the same, and also for preparing the said skins for kid leather, and for enamelling and Japaning the same.

## WEEKLY LIST OF PATENTS SEALED.

[From Gazette, August 19th, 1859.]

August 19th.

673. C. Garnett.]

506. J. Dale.

758. W. E. Newton.

513. W. McNaught.

810. F. Morton.

523. E. Gatwood.

812. A. V. Newton.

531. C. Hall and C. Hall

911. D. Doig.

559. J. Newcomb and J. G. Lovell.

1075. W. McIntyre Cranston.

631. J. Gunliffe, F. Piggott, and G. Mallinson.

1201. T. Vicars, sen., T. Vicars, jun., T. Ashmore, and J. Smith.

650. C. Desurmont and C. Goudeau.

[From Gazette, August 23rd, 1859.]

August 22nd.

545. D. Lichtenstadt.

521. J. Hine.

550. R. H. Collyer.

524. F. Brignoles.

648. J. S. Dawes.

536. E. J. Hughes.

1026. W. Moxon and J. J. Ben-

537. T. Cloake.

nett.

541. J. Edwards.

1437. A. V. Newton.

543. J. Templeman.

PATENTS ON WHICH THE STAMP DUTY OF £50 HAS BEEN PAID.

[From Gazette, August 19th, 1859.]

August 15th.

1950. J. Maudslay.

1936. H. Burden.

1955. T. York.

August 17th.

1931. C. M. Chouliou.

1957.

[From Gazette, August 23rd, 1859.]

August 18th.

1992. A. V. Newton.

1937. R. Robson.

August 19th.

1976. M. A. F. Mennons.

## LIST OF DESIGNS FOR ARTICLES OF UTILITY REGISTERED.

| No. in the Register. | Date of Registration. | Title.   | Proprietors' Name.       | Address.                                      |
|----------------------|-----------------------|--|--------------------------|---|
| 4189                 | July 7                | { Tool for Filling Cartridges and Closing<br>the ends thereof .....                          | John Adams.....          | 76, King William-street, E.C.                 |
| 4190                 | " 18                  | Appendage to Ordnance and Fire Arms  | Joseph Chesterton. ....  | Leicester.                                    |
| 4191                 | " 29                  | { Glass Water-Gauge, for Steam, Water,<br>or other Boilers where liquid may<br>be used ..... | James Chandler .....     | Creek Foundry, Creek-road, Deptford,<br>Kent. |
| 4192                 | " 30                  | Funnel Valve .....   | John Dockree .....       | 30, Robinson's-row, Kingsland.                |
| 4193                 | Aug. 1                | Valve for Heating Pipes .....  | Williams and Biven ..... | Reading.                                      |
| 4194                 | " 17                  | Corset Fastener .....  | Cooper and Smith .....   | Ashbourne, Derbyshire.                        |